REMARKS/ARGUMENTS

Claims 1-25 remain in this application. Claims 10 and 23 have been amended. Claims 1-9 and 17-22 had been previously withdrawn as a result of the restriction requirement. In view of the examiner's earlier restriction requirement, applicant retains the right to present claims 1-9 and 17-22 in a divisional application.

Claims 10-16 and 23-25 stand rejected under 103(a) as being unpatentable over US Patent publication 2001/0044043 (Badding) in view of US Patent 4,272,353.

With regard to claims 23-24, the Office Action stated that the Badding reference teaches the cell's ohmic resistance of less than 0.2 ohms/cm^2 and refers Applicant's to paragraph 0051 of this reference. However, this paragraph is completely silent with regard to the ohmic resistance of any feature of the fuel cell. Applicants found that the only reference to ohmic resistance of an element is the paragraph 0035 of this reference. Accordingly Applicant's will explain the applicability of paragraph 0035 to Applicant's claims 23-24. (Claim 25 depends (and was previously dependent on claim 10) and is silent with regard to ohmic resistance of the electrolyte sheet).

Applicants claims call for an **electrolyte** sheet with the ohmic resistance of no more than 0.5 **ohm**-cm^2. Paragraph [0035] of the Badding reference disclose the **electrode** resistance (i.e., the resistance of anode and cathode), not that of electrolyte. Thus, the Badding reference is silent with regard to the ohmic resistance of the electrolyte sheet.

US Patent 4,272, 353 also does not describe this feature. Accordingly, because the cited references, in combination, do not disclose all of the claimed features of claims 23-24, these claims are not obvious over the cited references.

It is also noted that paragraphs [0067] and [0068] disclose a **peak operating power** of 0.2**W**/ cm^2. However these paragraphs also do not disclose, **nor imply the level of ohmic resistance of the electrolyte sheet.**

Claim 10 has been amended to specify that the electrolyte sheet has a surface with a pre-determined pattern. (See, for example, Applicants Figs. 1-4B). The predetermined pattern is advantageous because it allows the applicants to optimize the mechanical and electrical performance of the electrolyte sheet. It is noted that a roughening process described in the cited reference ('353) will create a completely random pattern, which does not provide this advantage. Claims 11-16 depend from claim 10 as their base claims and, therefore, also incorporate the language of claim 10. Thus, Claims 10-16 are not unpatentable over US Patent publication 2001/0044043 (Badding) in view of US Patent 4,272,353.

Claims 10-16 and 23-24 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent Publication 2003/0180602 (Finn).

Claim 10 is an independent claim. It calls for a solid oxide electrode/electrolyte assembly that includes a thin electrolyte sheet of varied thickness of an average electrolyte sheet thickness between 3 micrometers and 30 micrometers, **and** a thickness variation of at least 2

micrometers. **That is, both of these conditions need to be satisfied simultaneously**, the surface roughness has to be at least 2 microns (i.e. not less than that) while the electrode thickness is between 3 micrometers and 30 micrometers.

The Office Action stated that Finn teaches that surface roughness is 0.5 to 2.5 microns, which gives an average electrolyte thickness of 10-50 microns. However, for claims 10-16 **we can only consider the Finn's surface roughness that is 2 microns or above, since this is the range claimed by the Applicants**. According to the Office Action the Finn reference teaches that the surface roughness corresponds to 5% (or 0.05) or less of the average thickness of the electrolyte sheet. Thus, assuming 5% value and working with the **minimum permissible value of the surface roughness of 2 microns** (as claimed by the Applicants), the minimal average thickness of the electrolyte sheet is **2 µm /0.05=40 µm**. This is much larger than the electrolyte thickness claimed by the Applicants. Of course, the 2.5 µm surface roughness disclosed by Finn reference corresponds to an even larger average thickness of the electrolyte sheet. Similarly. if the 2 µm surface roughness corresponds to 1% of the average thickness of the electrolyte sheet, as suggested by the Finn reference, therefore the thickness of the electrolyte sheet would be **2 µm /0.01=200 µm**

Accordingly claim 10 is not anticipated by the Finn reference. Claims 11-16 and 25 depend from claim 10 as their base claim and, therefore, explicitly incorporate the language of claim 10. Therefore, claims 11-16 and 25 are also not anticipated by the Finn reference.

Claim 23 specifies that the ohmic resistance of the **electrolyte** sheet is no more than 0.5 ohm/cm^2. This feature is not disclosed by the Finn reference. This feature imposes additional constrains on electrolyte thickness and/or composition and is not even taught or implied by the Finn reference.

Claim 24 depends from claim 23 as its base claim and, therefore, explicitly incorporates the language of claim 23. Accordingly, Applicant's claims 23 and 24 are not anticipated by the Finn reference.

Amendment to claim 23
Claim 23 has been amended to correct a minor typographical error.

Conclusion

Based upon the above amendments, remarks, and papers of records, applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Applicant believes that no extension of time is necessary to make this Reply timely. Should applicant be in error, applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Svetlana Z. Short at 607-974-0412

Respectfully submitted,

DATE: 11/16/05

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